LAB 2

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Develop a Java program to create a class Student with members usn, name, an array credits and an array marks. Include methods to accept and display details and a method to calculate SGPA of a student.

```
import java.util.Scanner;

class Student {     //
Member variables
   String name;     String
usn;     int credits[] = new
int[8];     int marks[] = new
int[8];     double sgpa =
0.0;     double cgpa;     int
grade[] = new int[8];

   // Method to calculate SGPA
double calculate(int m[], int c[]) {
double sum = 0.0;         int div = 0;

       for (int j = 0; j < 8; j++) {
          // Calculate grade for each subject
if (m[j] != 100) {                grade[j] =
(m[j] + 10) / 10;
```

```
            } else {
grade[j] = 10;
            }            div = credits[j] + div;
sum = sum + (grade[j] * credits[j]);

            // Debugging output for grade calculation
            System.out.println("Grade for subject " + (j + 1) + ": " + grade[j]);
        }

        // Calculate SGPA
sgpa = sum / div;
        System.out.println("SGPA: " + sgpa);
return sgpa;
    }

    // Method to calculate CGPA     double
calcgpa(double sgpa1, double sgpa2) {
cgpa = (sgpa1 + sgpa2) / 2;         return cgpa;
    }

    // Method to input credits and marks for the semester
void input() {
        Scanner sc = new Scanner(System.in);

        // Input credits
        System.out.println("Now enter subject credits for semester:");
for (int i = 0; i < 8; i++) {
            credits[i] = sc.nextInt();
        }
```

```
        // Input marks
        System.out.println("Now enter subject marks for semester:");
for (int i = 0; i < 8; i++) {            marks[i] = sc.nextInt();
        }
    }

    public static void main(String args[]) {
Scanner sc1 = new Scanner(System.in);

        // Input number of students
        System.out.println("Enter number of students: ");
int n = sc1.nextInt();

        // Create array of Student objects
        Student obj[] = new Student[n];

        // Loop through each student
for (int k = 0; k < n; k++) {
obj[k] = new Student();

            // Input student details
            System.out.println("Enter Student name: ");
obj[k].name = sc1.next();

            System.out.println("Enter Student USN: ");
            obj[k].usn = sc1.next();
```

```
        // Input semester details and calculate SGPA for Semester 1
System.out.println("Semester 1");            obj[k].input();
        double result = obj[k].calculate(obj[k].marks, obj[k].credits);
        System.out.println("1st Semester SGPA for " + obj[k].name + " (" +
obj[k].usn + ") is: " + result);

        // Input semester details and calculate SGPA for Semester 2
System.out.println("Semester 2");            obj[k].input();
        double result2 = obj[k].calculate(obj[k].marks, obj[k].credits);
        System.out.println("2nd Semester SGPA for " + obj[k].name + " (" +
obj[k].usn + ") is: " + result2);

        // Calculate and display CGPA for the year
        System.out.println("CGPA for 1st year is: " + obj[k].calcgpa(result,
result2));
      }
   } }
```

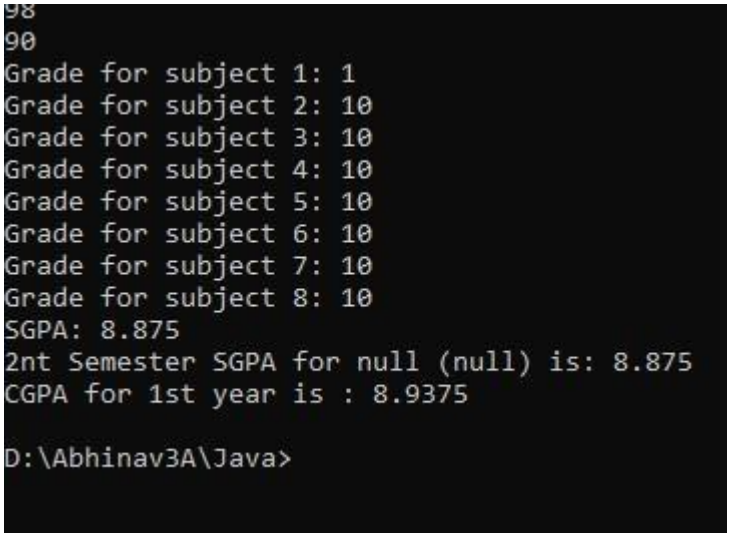
Outp

ut:

```
D:\Abhinav3A\Java>java Student
Enter number of students:
3
Enter Student name:
A
Enter Student USN:
1
Now enter subject credits for semester:
3
3
3
3
3
3
3
3
Now enter subject marks for semester:
85
90
91
90
89
78
70
95
Semester 1
Grade for subject 1: 9
Grade for subject 2: 10
Grade for subject 3: 10
Grade for subject 4: 10
Grade for subject 5: 9
Grade for subject 6: 8
Grade for subject 7: 8
Grade for subject 8: 10
SGPA: 9.25
1st Semester SGPA for null (null) is: 9.25
Semester 2
Now enter subject credits for semester:
5
5
5
5
5
5
5
5
Now enter subject marks for semester:
90
98
95
96
87
85
80
```

```
Grade for subject 1: 10
Grade for subject 2: 10
Grade for subject 3: 10
Grade for subject 4: 10
Grade for subject 5: 9
Grade for subject 6: 9
Grade for subject 7: 9
Grade for subject 8: 9
SGPA: 9.5
2nt Semester SGPA for null (null) is: 9.5
CGPA for 1st year is : 9.375
Enter Student name:
B
Enter Student USN:
2
Now enter subject credits for semester:
5
5
5
5
5
5
5
5
Now enter subject marks for semester:
90
89
78
87
89
97
79
90
Semester 1
Grade for subject 1: 10
Grade for subject 2: 9
Grade for subject 3: 8
Grade for subject 4: 9
Grade for subject 5: 9
Grade for subject 6: 10
Grade for subject 7: 8
Grade for subject 8: 10
SGPA: 9.125
1st Semester SGPA for null (null) is: 9.125
Semester 2
Now enter subject credits for semester:
5
5
5
5
5
5
5
5
Now enter subject marks for semester:
90
98
89
79
98
90
95
```

```
89
Grade for subject 1: 10
Grade for subject 2: 10
Grade for subject 3: 9
Grade for subject 4: 8
Grade for subject 5: 10
Grade for subject 6: 10
Grade for subject 7: 10
Grade for subject 8: 9
SGPA: 9.5
2nt Semester SGPA for null (null) is: 9.5
CGPA for 1st year is : 9.3125
Enter Student name:
C
Enter Student USN:
3
Now enter subject credits for semester:
5
5
5
5
5
5
5
5
Now enter subject marks for semester:
90
98
78
87
79
89
98
78
Semester 1
Grade for subject 1: 10
Grade for subject 2: 10
Grade for subject 3: 8
Grade for subject 4: 9
Grade for subject 5: 8
Grade for subject 6: 9
Grade for subject 7: 10
Grade for subject 8: 8
SGPA: 9.0
1st Semester SGPA for null (null) is: 9.0
Semester 2
Now enter subject credits for semester:
5
5
5
5
5
5
5
5
Now enter subject marks for semester:
8
90
95
95
95
95
98
```


98
90
Grade for subject 1: 1
Grade for subject 2: 10
Grade for subject 3: 10
Grade for subject 4: 10
Grade for subject 5: 10
Grade for subject 6: 10
Grade for subject 7: 10
Grade for subject 8: 10
SGPA: 8.875
2nt Semester SGPA for null (null) is: 8.875
CGPA for 1st year is : 8.9375
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